Fig. 1

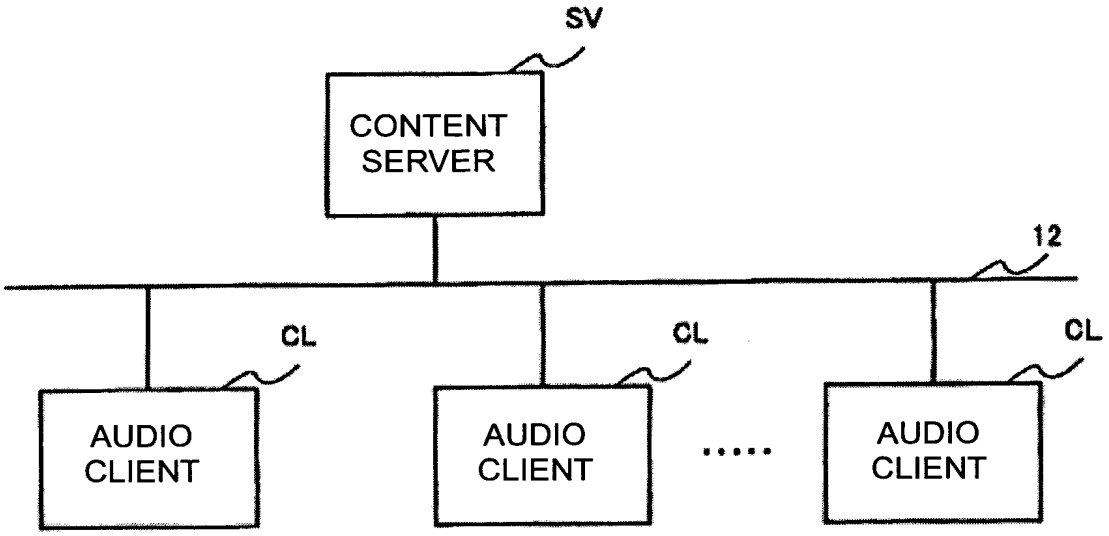

SV
CONTENT SERVER
12
CL
CL
CL
AUDIO CLIENT
AUDIO CLIENT
.....
AUDIO CLIENT
10

Fig. 2

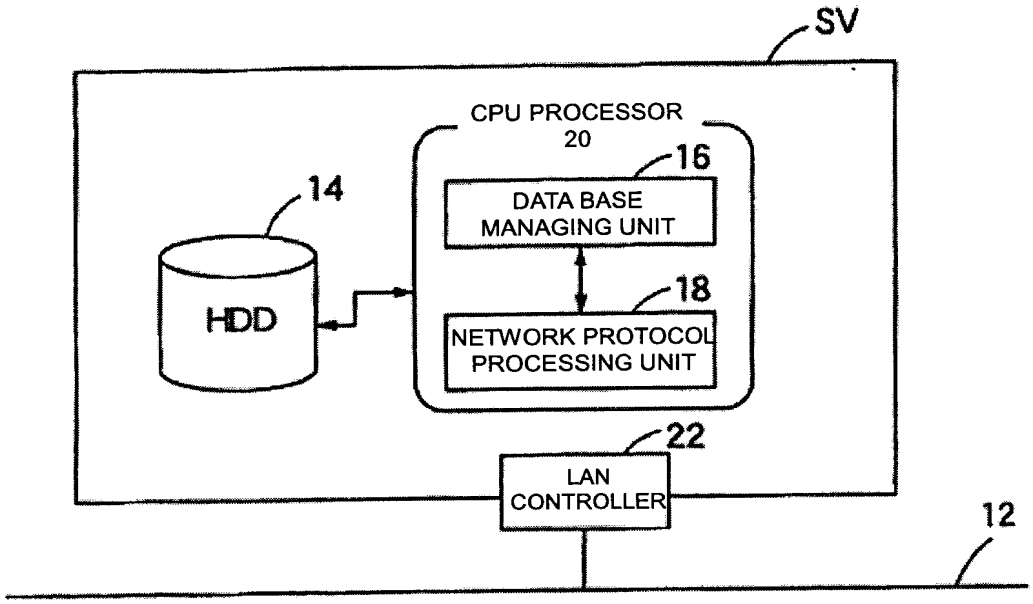

SV
CPU PROCESSOR
20
16
DATA BASE
MANAGING UNIT
14
HDD
18
NETWORK PROTOCOL
PROCESSING UNIT
22
LAN
CONTROLLER
12

Fig. 3

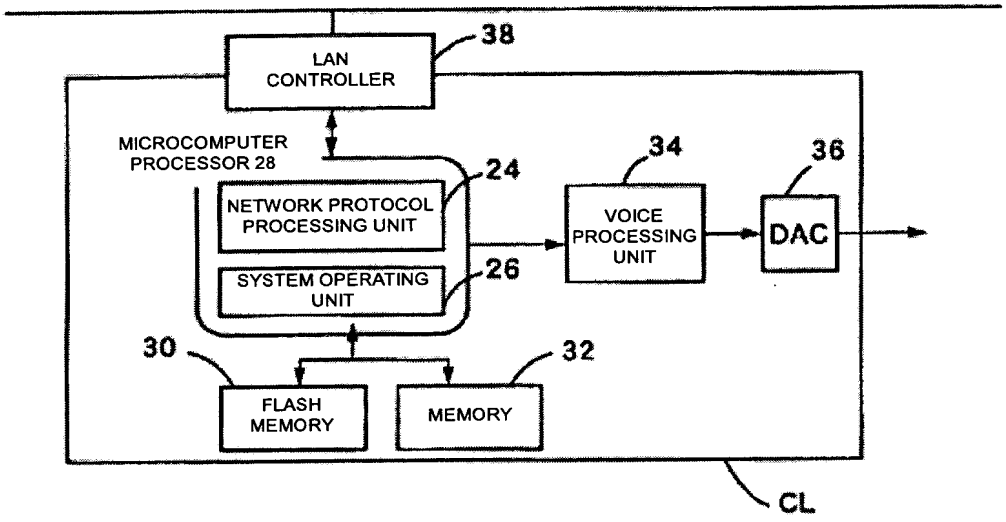

LAN CONTROLLER
38
MICROCOMPUTER PROCESSOR 28
NETWORK PROTOCOL PROCESSING UNIT
24
SYSTEM OPERATING UNIT
26
34
VOICE PROCESSING UNIT
36
DAC
30
FLASH MEMORY
32
MEMORY
CL

Fig. 4

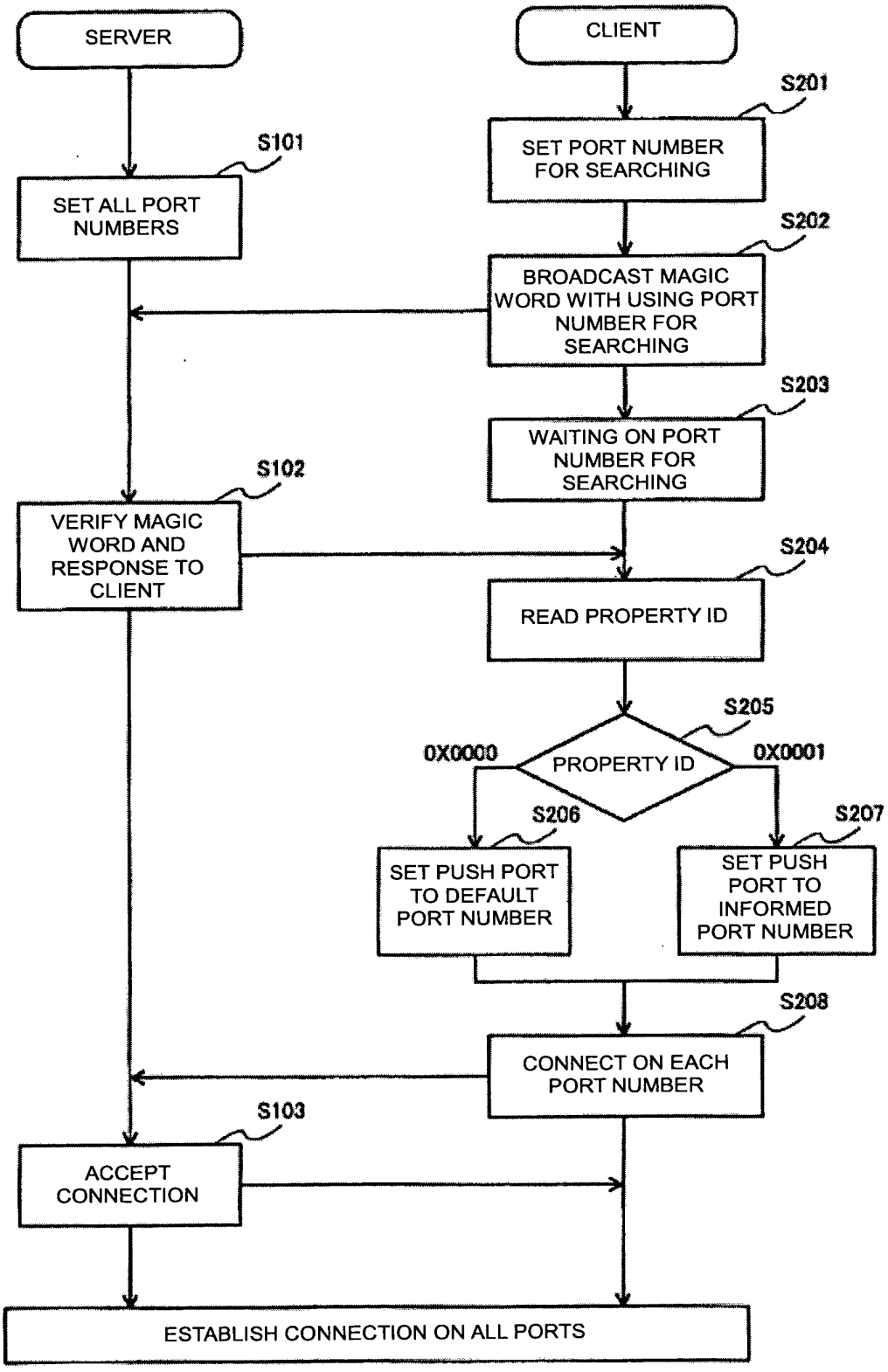

SERVER
CLIENT
S101
SET ALL PORT NUMBERS
S201
SET PORT NUMBER FOR SEARCHING
S202
BROADCAST MAGIC WORD WITH USING PORT NUMBER FOR SEARCHING
S203
WAITING ON PORT NUMBER FOR SEARCHING
S102
VERIFY MAGIC WORD AND RESPONSE TO CLIENT
S204
READ PROPERTY ID
S205
PROPERTY ID
0X0000
0X0001
S206
SET PUSH PORT TO DEFAULT PORT NUMBER
S207
SET PUSH PORT TO INFORMED PORT NUMBER
S208
CONNECT ON EACH PORT NUMBER
S103
ACCEPT CONNECTION
ESTABLISH CONNECTION ON ALL PORTS

Fig. 5

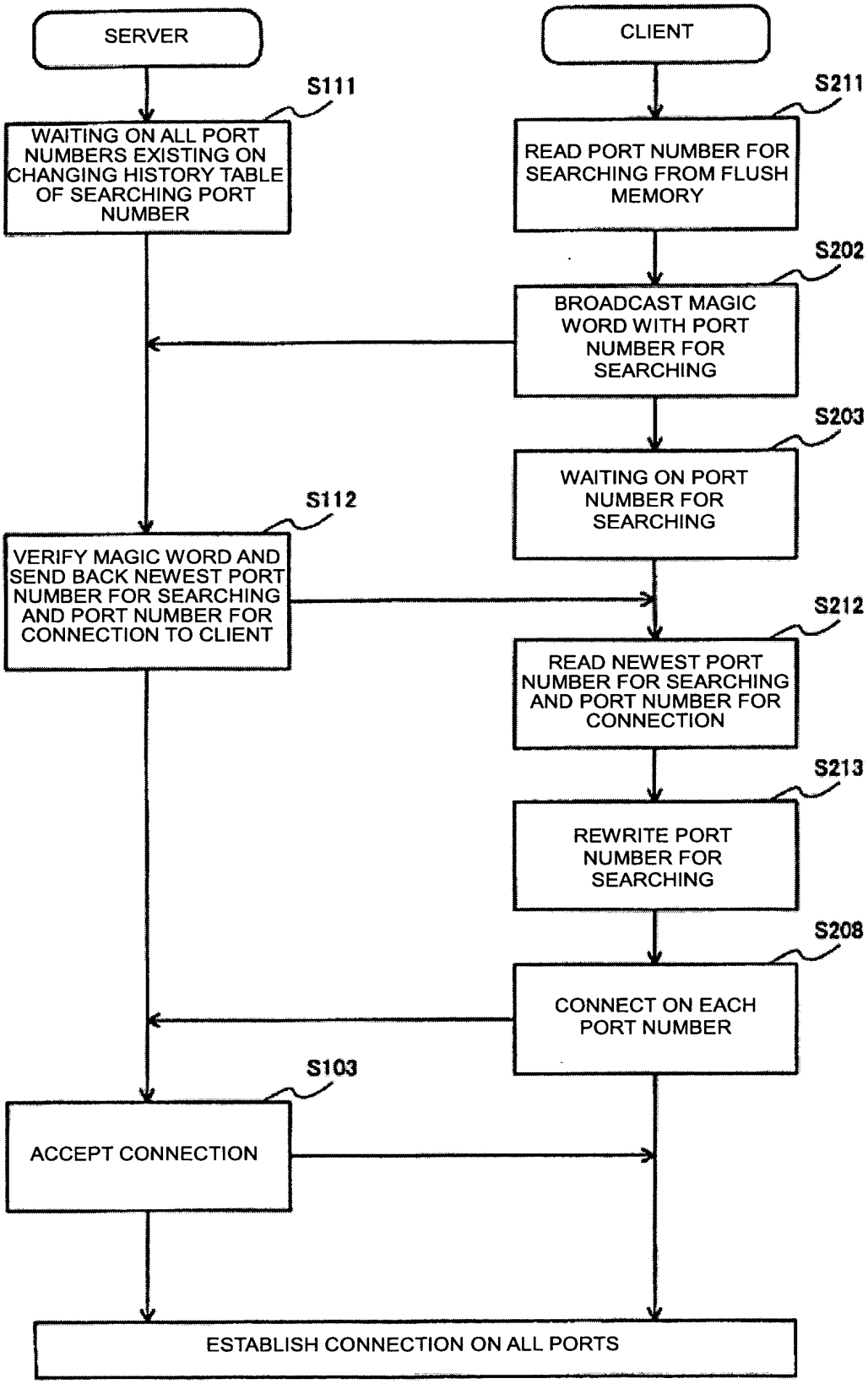

SERVER
CLIENT
S111
WAITING ON ALL PORT NUMBERS EXISTING ON CHANGING HISTORY TABLE OF SEARCHING PORT NUMBER
S211
READ PORT NUMBER FOR SEARCHING FROM FLUSH MEMORY
S202
BROADCAST MAGIC WORD WITH PORT NUMBER FOR SEARCHING
S203
WAITING ON PORT NUMBER FOR SEARCHING
S112
VERIFY MAGIC WORD AND SEND BACK NEWEST PORT NUMBER FOR SEARCHING AND PORT NUMBER FOR CONNECTION TO CLIENT
S212
READ NEWEST PORT NUMBER FOR SEARCHING AND PORT NUMBER FOR CONNECTION
S213
REWRITE PORT NUMBER FOR SEARCHING
S208
CONNECT ON EACH PORT NUMBER
S103
ACCEPT CONNECTION
ESTABLISH CONNECTION ON ALL PORTS

Fig. 6

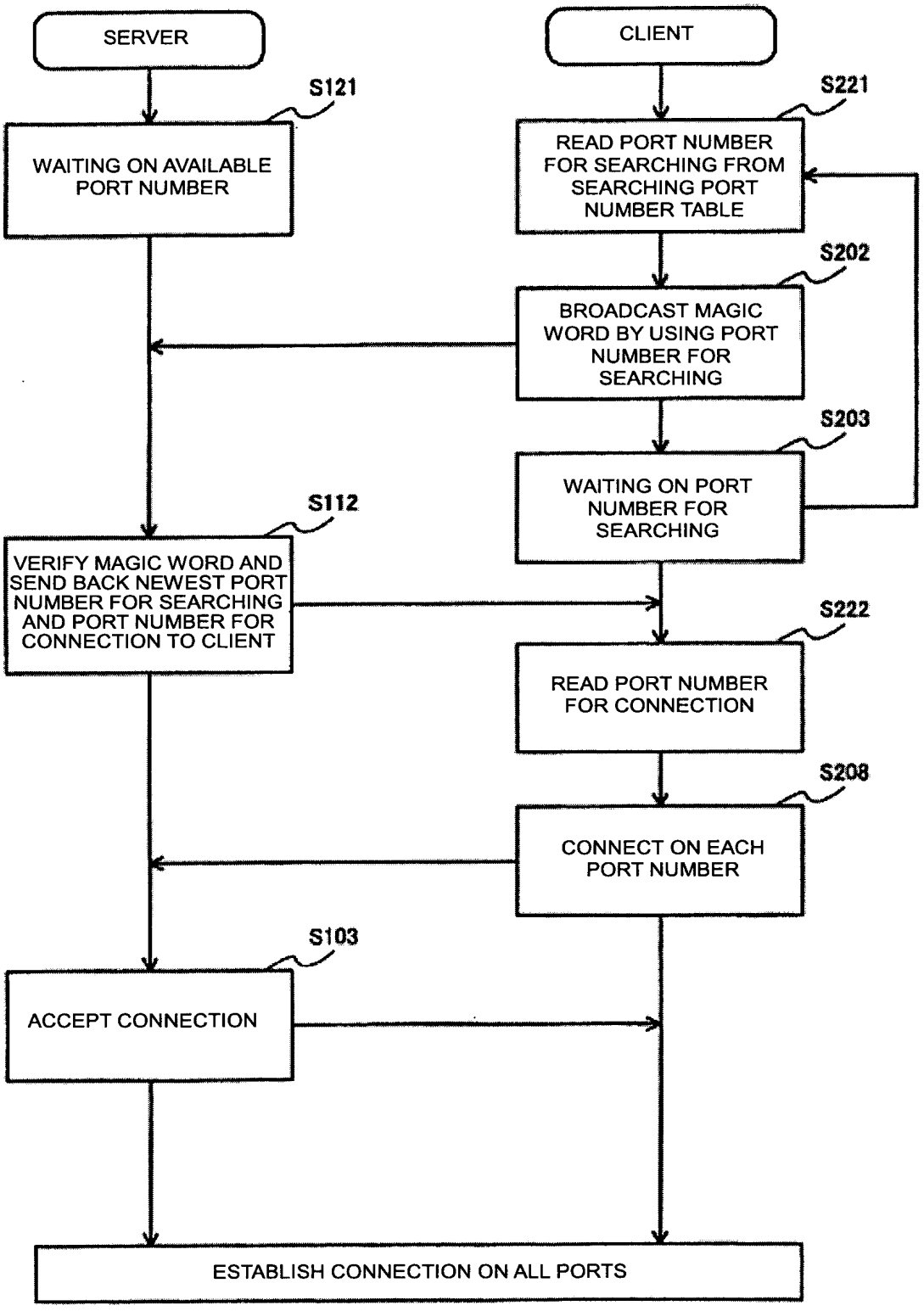

SERVER
CLIENT
S121
WAITING ON AVAILABLE PORT NUMBER
S221
READ PORT NUMBER FOR SEARCHING FROM SEARCHING PORT NUMBER TABLE
S202
BROADCAST MAGIC WORD BY USING PORT NUMBER FOR SEARCHING
S203
WAITING ON PORT NUMBER FOR SEARCHING
S112
VERIFY MAGIC WORD AND SEND BACK NEWEST PORT NUMBER FOR SEARCHING AND PORT NUMBER FOR CONNECTION TO CLIENT
S222
READ PORT NUMBER FOR CONNECTION
S208
CONNECT ON EACH PORT NUMBER
S103
ACCEPT CONNECTION
ESTABLISH CONNECTION ON ALL PORTS

Fig. 7

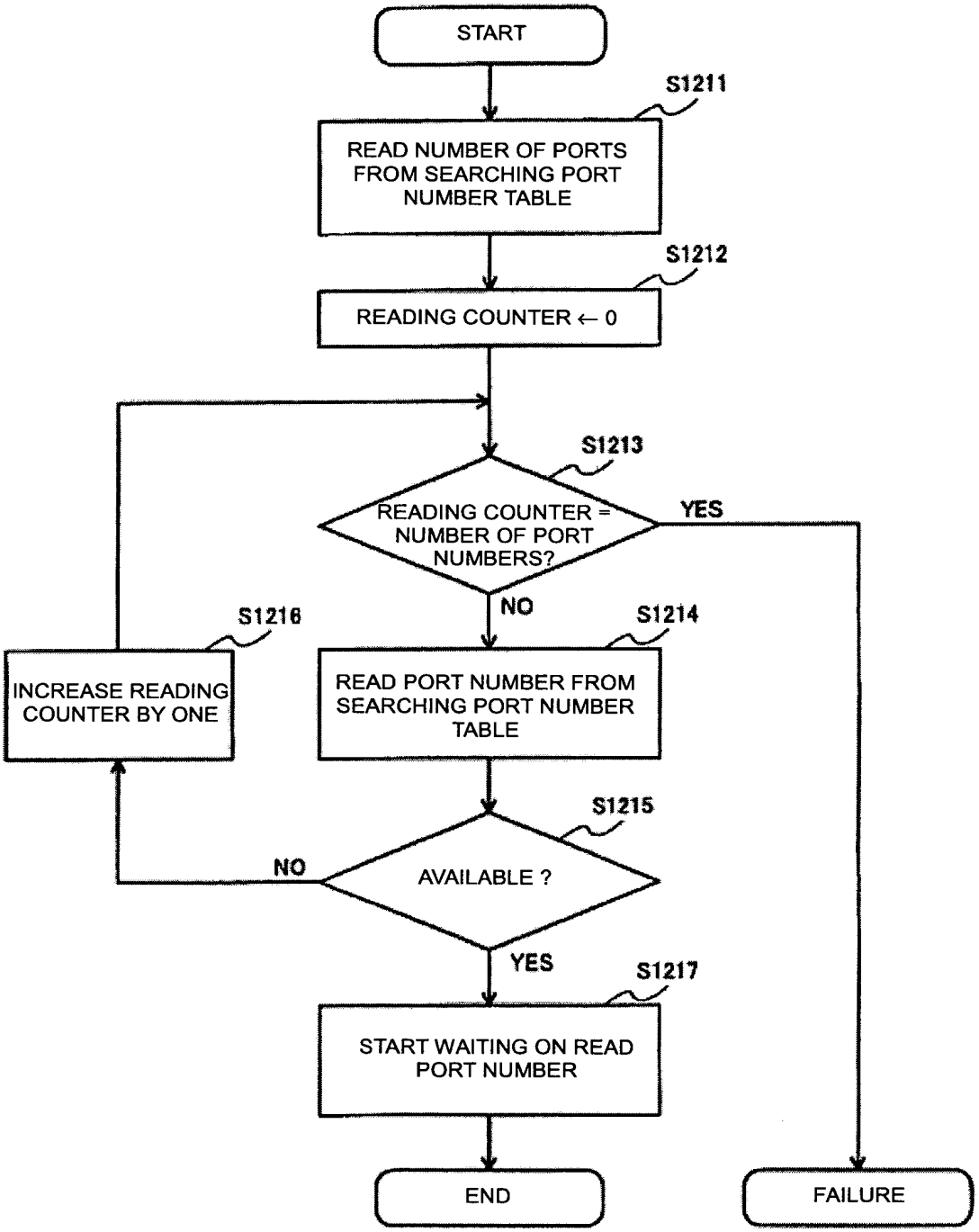

START
S1211
READ NUMBER OF PORTS FROM SEARCHING PORT NUMBER TABLE
S1212
READING COUNTER ← 0
S1213
READING COUNTER = NUMBER OF PORT NUMBERS?
YES
NO
S1214
READ PORT NUMBER FROM SEARCHING PORT NUMBER TABLE
S1215
AVAILABLE ?
NO
S1216
INCREASE READING COUNTER BY ONE
YES
S1217
START WAITING ON READ PORT NUMBER
END
FAILURE

Fig. 8

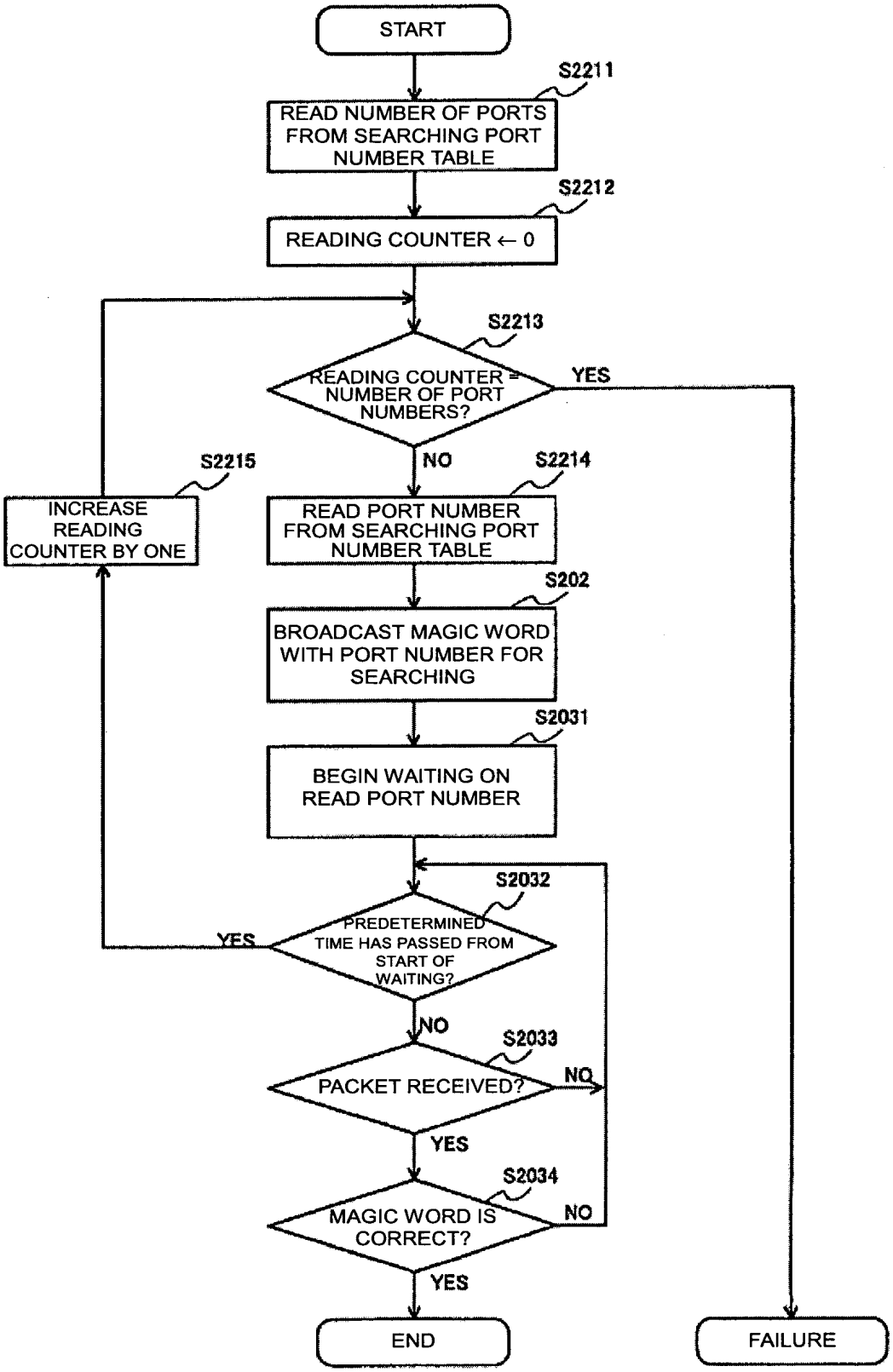

START
S2211
READ NUMBER OF PORTS FROM SEARCHING PORT NUMBER TABLE
S2212
READING COUNTER ← 0
S2213
READING COUNTER = NUMBER OF PORT NUMBERS?
YES
NO
S2214
READ PORT NUMBER FROM SEARCHING PORT NUMBER TABLE
S2215
INCREASE READING COUNTER BY ONE
S202
BROADCAST MAGIC WORD WITH PORT NUMBER FOR SEARCHING
S2031
BEGIN WAITING ON READ PORT NUMBER
S2032
PREDETERMINED TIME HAS PASSED FROM START OF WAITING?
YES
NO
S2033
PACKET RECEIVED?
NO
YES
S2034
MAGIC WORD IS CORRECT?
NO
YES
END
FAILURE

Fig. 9

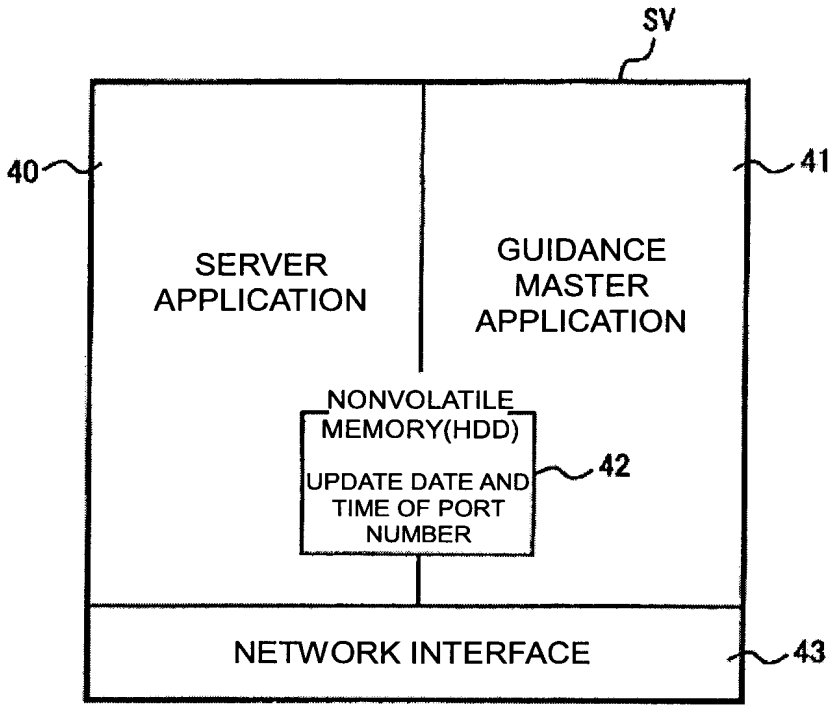

SV
40
41
SERVER APPLICATION
GUIDANCE MASTER APPLICATION
NONVOLATILE MEMORY(HDD)
UPDATE DATE AND TIME OF PORT NUMBER
42
NETWORK INTERFACE
43

Fig. 10

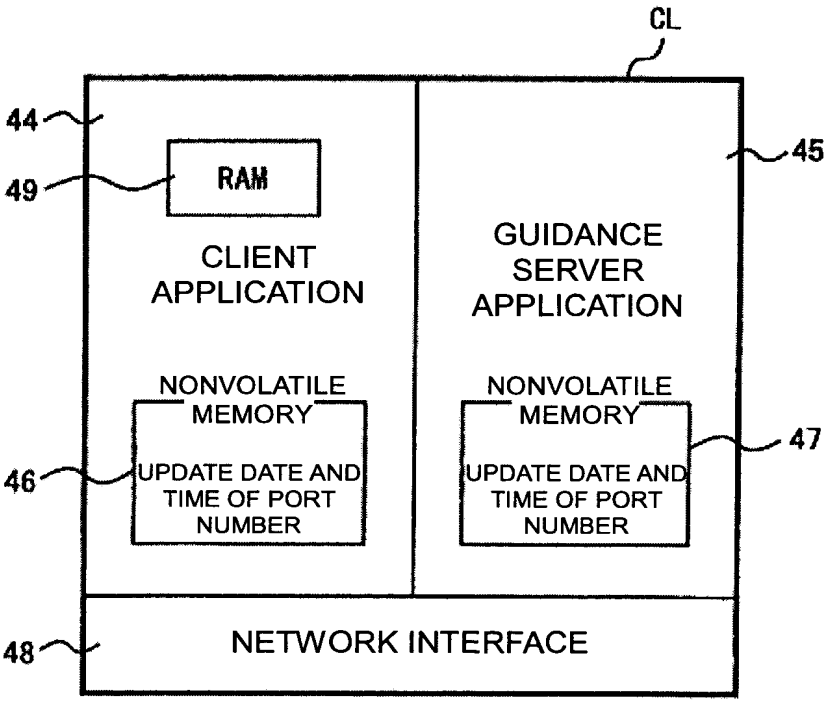

CL
44
45
49
RAM
CLIENT APPLICATION
GUIDANCE SERVER APPLICATION
NONVOLATILE MEMORY
NONVOLATILE MEMORY
46
UPDATE DATE AND TIME OF PORT NUMBER
UPDATE DATE AND TIME OF PORT NUMBER
47
48
NETWORK INTERFACE

Fig. 11

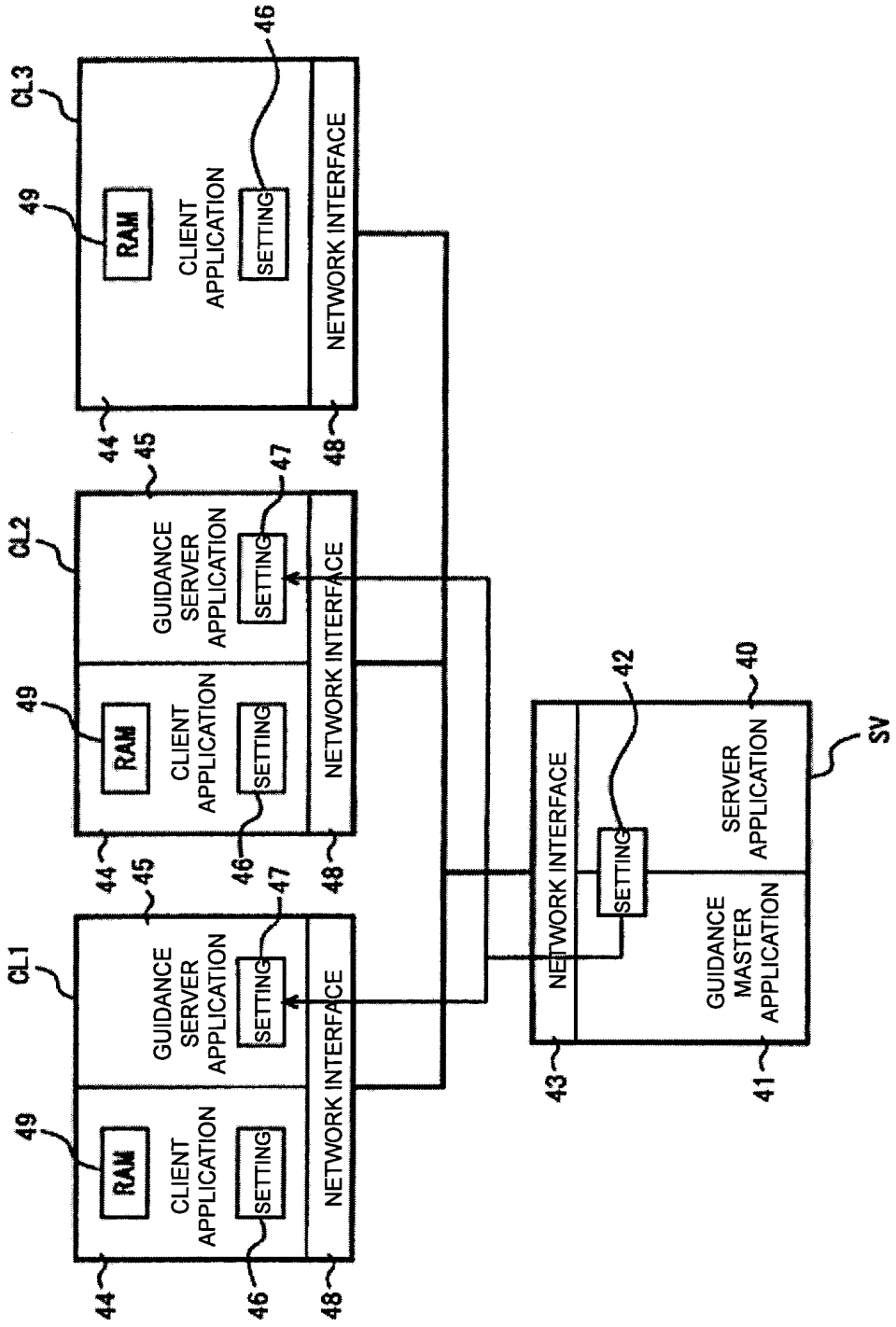

CL3
CL2
CL1
SV
RAM
CLIENT APPLICATION
GUIDANCE SERVER APPLICATION
SETTING
NETWORK INTERFACE
SERVER APPLICATION
GUIDANCE MASTER APPLICATION
40
41
42
43
44
45
46
47
48
49

Fig. 12

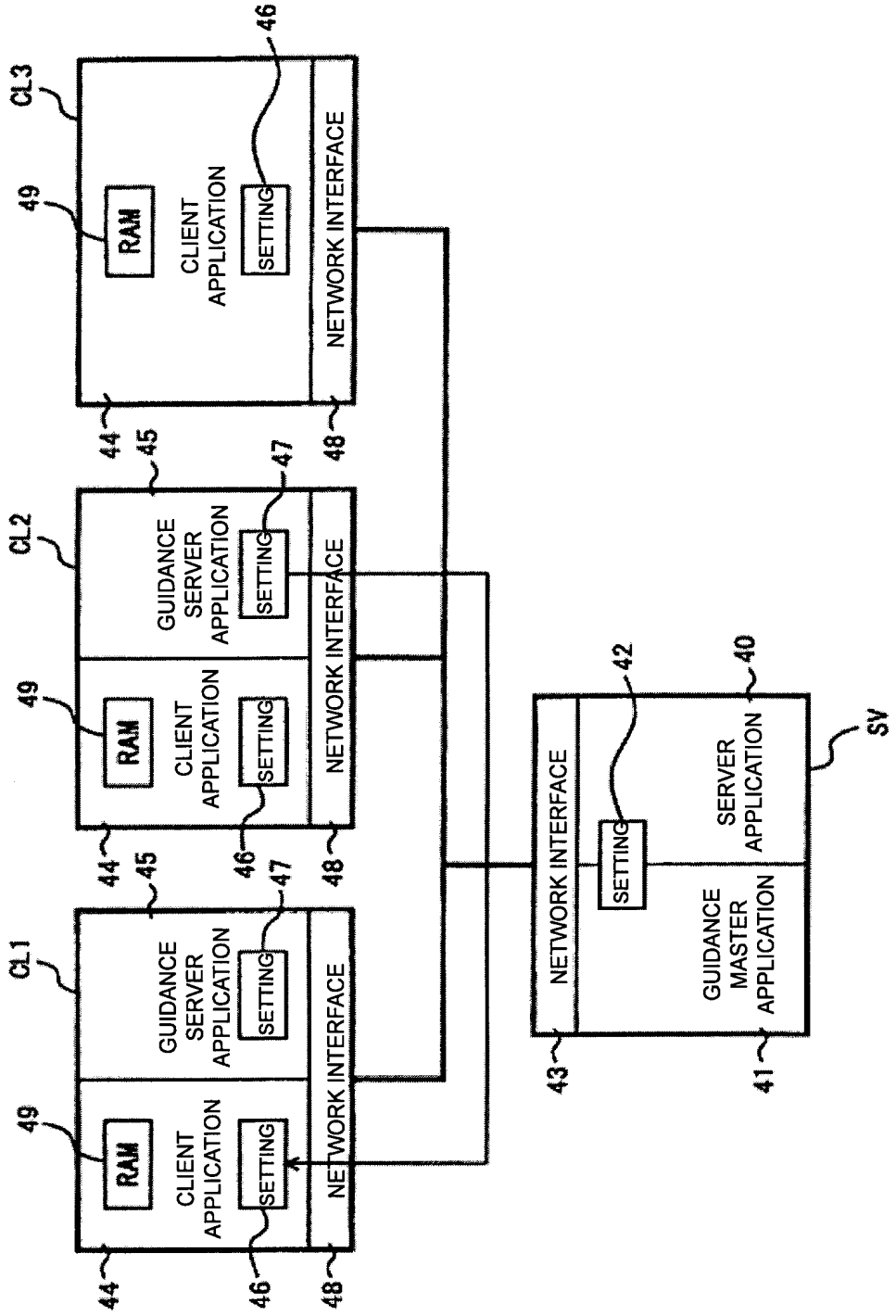

CL3
CL2
CL1
SV
RAM
CLIENT APPLICATION
SETTING
GUIDANCE SERVER APPLICATION
NETWORK INTERFACE
SERVER APPLICATION
GUIDANCE MASTER APPLICATION
40
41
42
43
44
45
46
47
48
49

Fig. 13

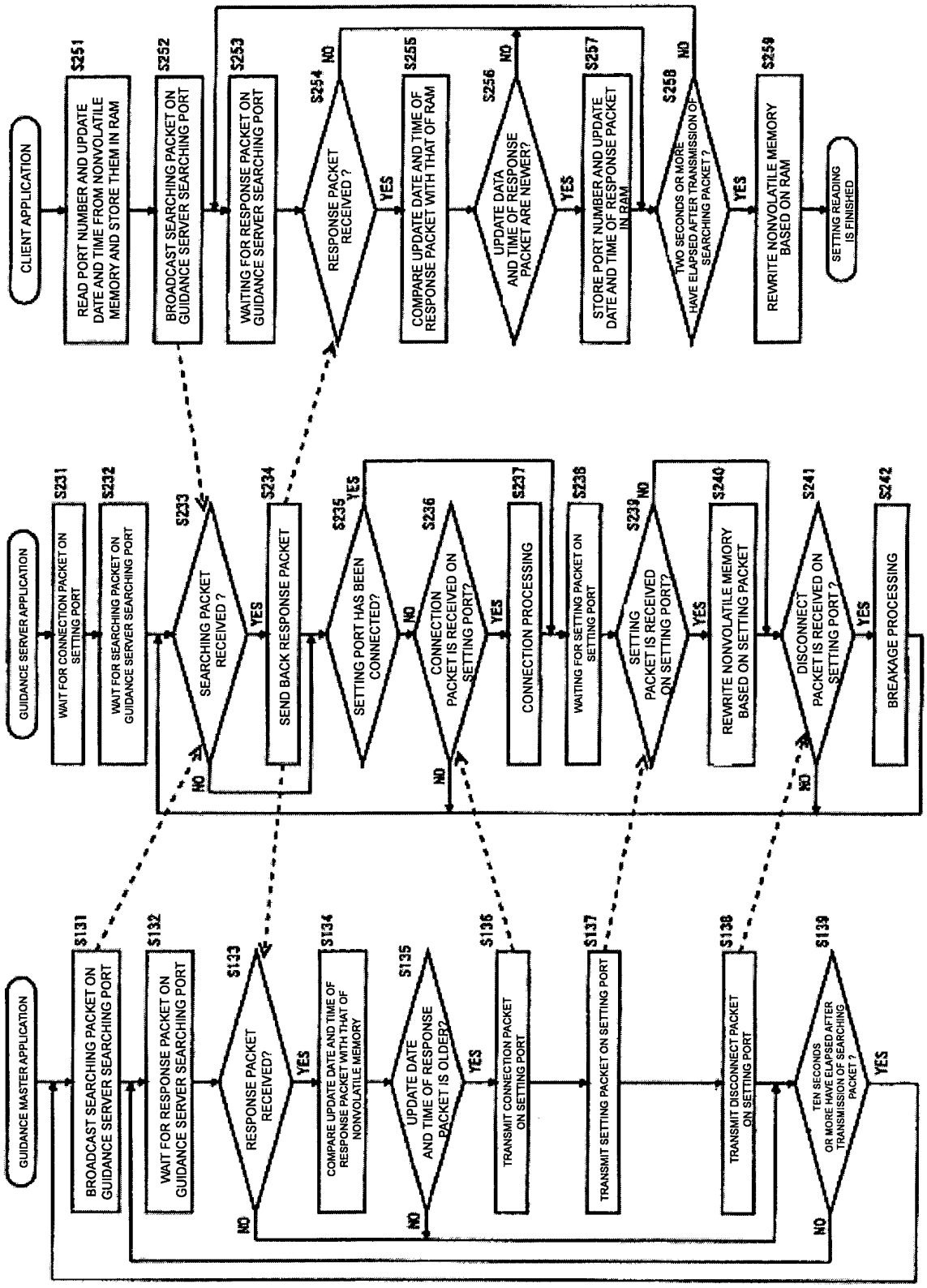
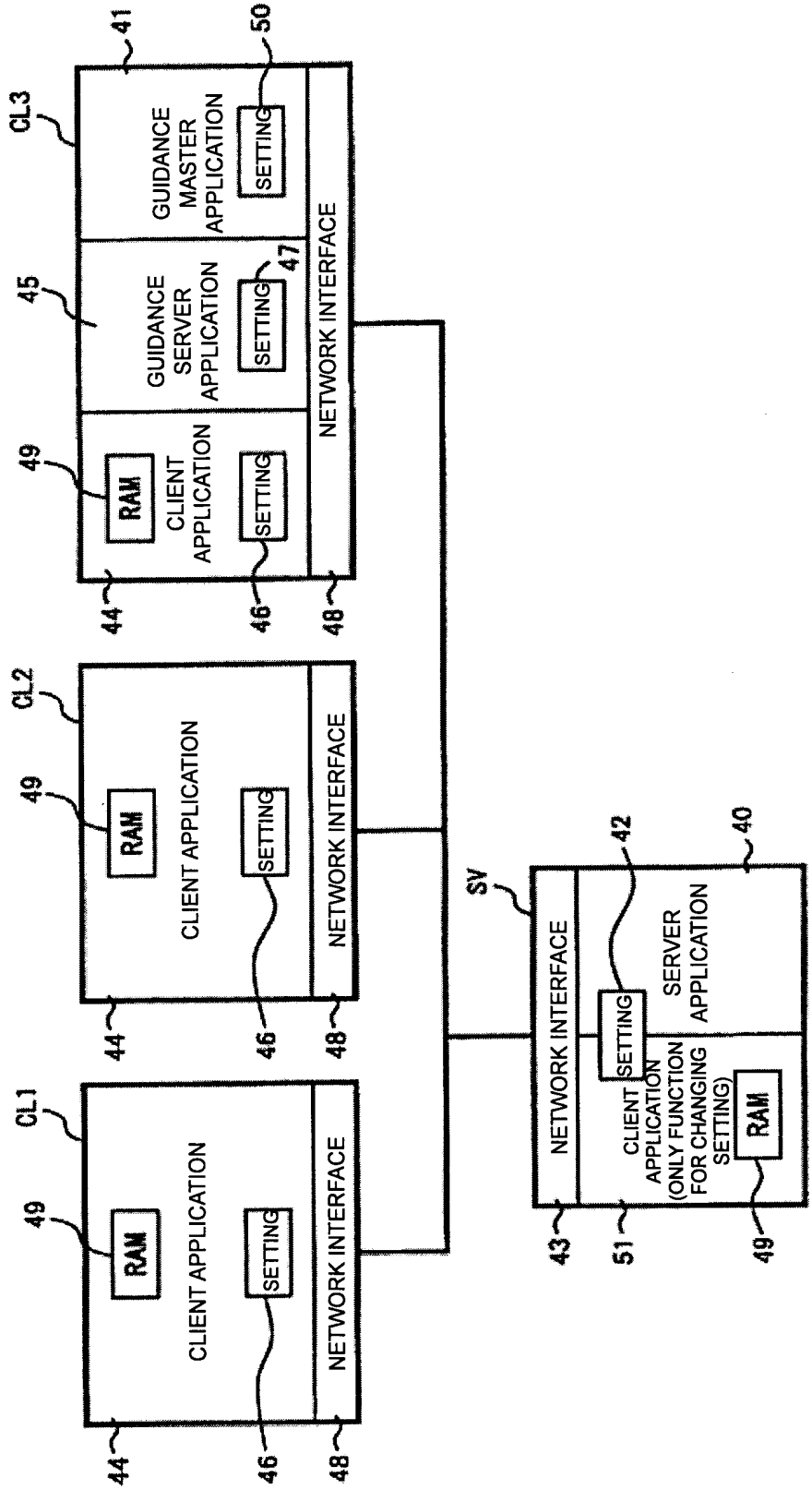

GUIDANCE MASTER APPLICATION
S131
BROADCAST SEARCHING PACKET ON GUIDANCE SERVER SEARCHING PORT
S132
WAIT FOR RESPONSE PACKET ON GUIDANCE SERVER SEARCHING PORT
S133
RESPONSE PACKET RECEIVED?
NO
YES
S134
COMPARE UPDATE DATE AND TIME OF RESPONSE PACKET WITH THAT OF NONVOLATILE MEMORY
S135
UPDATE DATE AND TIME OF RESPONSE PACKET IS OLDER?
NO
YES
S136
TRANSMIT CONNECTION PACKET ON SETTING PORT
S137
TRANSMIT SETTING PACKET ON SETTING PORT
S138
TRANSMIT DISCONNECT PACKET ON SETTING PORT
S139
TEN SECONDS OR MORE HAVE ELAPSED AFTER TRANSMISSION OF SEARCHING PACKET ?
NO
YES
GUIDANCE SERVER APPLICATION
S231
WAIT FOR CONNECTION PACKET ON SETTING PORT
S232
WAIT FOR SEARCHING PACKET ON GUIDANCE SERVER SEARCHING PORT
S233
SEARCHING PACKET RECEIVED ?
NO
YES
S234
SEND BACK RESPONSE PACKET
S235
SETTING PORT HAS BEEN CONNECTED?
NO
YES
S236
CONNECTION PACKET IS RECEIVED ON SETTING PORT?
NO
YES
S237
CONNECTION PROCESSING
S238
WAITING FOR SETTING PACKET ON SETTING PORT
S239
SETTING PACKET IS RECEIVED ON SETTING PORT?
NO
YES
S240
REWRITE NONVOLATILE MEMORY BASED ON SETTING PACKET
S241
DISCONNECT PACKET IS RECEIVED ON SETTING PORT ?
NO
YES
S242
BREAKAGE PROCESSING
CLIENT APPLICATION
S251
READ PORT NUMBER AND UPDATE DATE AND TIME FROM NONVOLATILE MEMORY AND STORE THEM IN RAM
S252
BROADCAST SEARCHING PACKET ON GUIDANCE SERVER SEARCHING PORT
S253
WAITING FOR RESPONSE PACKET ON GUIDANCE SERVER SEARCHING PORT
S254
RESPONSE PACKET RECEIVED ?
NO
YES
S255
COMPARE UPDATE DATE AND TIME OF RESPONSE PACKET WITH THAT OF RAM
S256
UPDATE DATA AND TIME OF RESPONSE PACKET ARE NEWER?
NO
YES
S257
STORE PORT NUMBER AND UPDATE DATE AND TIME OF RESPONSE PACKET IN RAM
S258
TWO SECONDS OR MORE HAVE ELAPSED AFTER TRANSMISSION OF SEARCHING PACKET ?
NO
YES
S259
REWRITE NONVOLATILE MEMORY BASED ON RAM
SETTING READING IS FINISHED

Fig. 14


CL3
41
50
GUIDANCE MASTER APPLICATION
SETTING
45
GUIDANCE SERVER APPLICATION
SETTING
47
49
RAM
CLIENT APPLICATION
SETTING
NETWORK INTERFACE
44
46
48
CL2
49
RAM
CLIENT APPLICATION
SETTING
NETWORK INTERFACE
44
46
48
SV
NETWORK INTERFACE
42
SETTING
CLIENT APPLICATION (ONLY FUNCTION FOR CHANGING SETTING)
SERVER APPLICATION
40
RAM
43
51
49
CL1
49
RAM
CLIENT APPLICATION
SETTING
NETWORK INTERFACE
44
46
48